18. (Twice Amended) The method [in] of Claim 72 wherein only a single data recorder/processor is used.

19. (Twice Amended) The method [in] of Claim 72 wherein two data recorder/processors are used.

20. (Twice Amended) The method [in] of Claim 72 wherein three or more data recorder/processors are used.

21. (Twice Amended) The method [in] of Claim 72 wherein said telemetry network uses digital signals.

22. (Twice Amended) The method [in] of Claim 72 wherein said telemetry network uses analog signals.

23. (Twice Amended) The method [in] of Claim 72 wherein said telemetry network uses fiber optics links.

24. (Twice Amended) The method [in] of Claim 72 wherein said telemetry network uses [RF] radio frequency or microwave links.

25. (Twice Amended) The method [in] of Claim 72 wherein said telemetry network uses optical links.

26. (Twice Amended) The method [in] of Claim 72 wherein said telemetry network uses hard wire links.

27. (Twice Amended) The method [in] of Claim 72 wherein said telemetry network uses a daisy chain architecture.

28. (Twice Amended) The method [in] of Claim 72 wherein said telemetry network uses a star architecture.

30. (Twice Amended) The method of Claim 72 wherein said frequency synchronization signal is integrated with said received and recorded wide band excitation input signals to produce a single signal transmitted through said telemetry network.

34. (Twice Amended) The method of Claim 72 wherein said frequency synchronization signal is not integrated with said received and recorded wide band excitation input signals so that two separate signals are transmitted through said telemetry network.

40. (Twice Amended) The method of Claim 39 wherein said one or more waveform [synthesizer synthesizes] synthesizers synthesize a modulated signal about a specified center frequency.

45. (Twice Amended) The method of Claim 40 wherein said one or more waveform [synthesizer] synthesizers [uses] use up-conversion to shift the modulated signal and [its] said modulated signal's specific center frequency to a new frequency about a new specified center frequency.

47. (Twice Amended) The method of Claim 74 wherein said system [under test] is not physically distributed.

48. (Twice Amended) The method of Claim 74 wherein said wide band excitation signal consists of ambient radiation.

52. (Twice Amended) Apparatus for obtaining data for measuring the transfer function of a physical system comprising:

a) a waveform synthesizer for generating a synthesized low-power, wide band waveform signal and exciting said physical system with said waveform signal as an input signal;

b) a first data recorder/processor for sampling said low-power, wide band input signal;

c) second and third data [recorder/processors] recorders/processors located at spatially distributed locations within said physical system;

d) digital fiber optic telemetry for digitally interconnecting each of said first, second and third data [recorder/processors] recorders/processors and said waveform synthesizer;

e) an acquisition control computer connected to said first, second and third data [recorder/ processors] recorders/processors and said waveform synthesizer in a network arrangement;

f) a synchronization signal generator connected to said network arrangement; and,

g) controller means for simultaneously commanding said waveform synthesizer to broadcast said low-power, wide band input signal to excite the physical system and to send a synchronization signal through said network arrangement to cause said first data recorder/processor to sample said low-power, wide band input signal, to cause said second and third data recorders/processors to measure and record the signals received in said physical system from said low-power, wide band input signal, and to cause said first, second and third [recorder/processors] recorders/processors to convert said measured and recorded signals received therein to digital format and to send said digital format in synchronized form through said network arrangement to said acquisition control computer for later processing in said acquisition control computer to compute a transfer function.

53. (Twice Amended) The apparatus of Claim 52 wherein said waveform synthesizer synthesizes a fully programmable 3 MHz modulated excitation signal about a center frequency located in the range of about 0-999 MHz.

55. (Twice Amended) The [method] apparatus of Claim 53 wherein said waveform synthesizer is adapted to generate a frequency modulated excitation signal.

60. (Twice Amended) The apparatus of Claim 53 wherein said waveform synthesizer is adapted to up-convert the modulated excitation signal to a modulated excitation signal about a specified center frequency.

61. (Twice Amended) The apparatus of Claim 52 wherein said data [recorder/processors] recorders/processors can record a 3MHz wide modulated signal centered about any frequency from 0 - 999 MHz.

62. (Twice Amended) The apparatus of Claim 52 wherein said data [recorder/processors] recorders/processors use a two-step, down-conversion technique for shifting [the modulated] said excitation signal to a 15 MHz center frequency.

63. (Twice Amended) The apparatus of Claim 54 wherein said data [recorder/processors] recorders/processors use a 12-bit analog-to-digital converter sampled at 12 MHz to digitize and store said [modulated] excitation signal.

72. (Amended) A method of acquisition and signal transmission through a plurality of spatially distributed locations comprising the steps of:

a) exciting at a low power a physical system with a wide band excitation signal as an input signal;

b) locating a data recorder/processor at [each] spatially distributed [location] locations;

c) interconnecting each said spatially distributed data recorder/processor to an acquisition control computer using a telemetry network;

d) sending a frequency synchronization signal through said telemetry network;

e) simultaneously receiving and recording said wide band excitation input [signals] signal in said data recorders/processors at each spatially distributed location;

f) sending said recorded signals to said acquisition control computer via said telemetry network; and,

g) using a stochastic process to derive from said recorded signals a system transfer function for said physical system over the width of said wide band excitation signal.

73. (Amended) The method of Claim 72 including the further step of storing said simultaneously received and recorded wide band excitation input [signals] signal in said data recorders/processors at each spatially distributed location.

74. (Amended) A method of estimating the transfer function of a system comprising the steps of:

a) exciting at a low power said system with wide band excitation signals as input signals;

b) distributing data [recorder/processors] recorders/processors at various locations about said system;

c) interconnecting each said data recorder/processor to an acquisition control computer using a telemetry network;

d) sending a frequency synchronization signal through said telemetry network;

e) simultaneously receiving and recording said wide band excitation[;] input signals and said frequency synchronization signal in said data recorders/processors at each said [distributed] location;

f) sending said recorded wide band excitation[;] input signals and said frequency synchronization signal to said acquisition control computer via said telemetry network; and,

g) analyzing said recorded wide band excitation input signals using stochastic processing techniques to estimate the system transfer function.

75. (Amended) The method [in] <u>of</u> Claim 72 wherein said telemetry network is selected from the group consisting of fiber optic links, radio frequency links, microwave links, optical links and hard wiring links.

76. (Amended) The method [in] <u>of</u> Claim 72 wherein said telemetry network is selected from the group consisting of daisy chain architecture and star architecture.

CLEAN VERSION OF EACH REPLACEMENT CLAIM

18. The method of Claim 72 wherein only a single data recorder/processor is used.

19. The method of Claim 72 wherein two data recorder/processors are used.

20. The method of Claim 72 wherein three or more data recorder/processors are used.

21. The method of Claim 72 wherein said telemetry network uses digital signals.

22. The method of Claim 72 wherein said telemetry network uses analog signals.

23. The method of Claim 72 wherein said telemetry network uses fiber optics links.

24. The method of Claim 72 wherein said telemetry network uses radio frequency or microwave links.

25. The method of Claim 72 wherein said telemetry network uses optical links.

26. The method of Claim 72 wherein said telemetry network uses hard wire links.

27. The method of Claim 72 wherein said telemetry network uses a daisy chain architecture.

28. The method of Claim 72 wherein said telemetry network uses a star architecture.

30. The method of Claim 72 wherein said frequency synchronization signal is integrated with said received and recorded wide band excitation input signals to produce a single signal transmitted through said telemetry network.

34. The method of Claim 72 wherein said frequency synchronization signal is not integrated with said received and recorded wide band excitation input signals so that two separate signals are transmitted through said telemetry network.

40. The method of Claim 39 wherein said one or more waveform synthesizers synthesize a modulated signal about a specified center frequency.

45. The method of Claim 40 wherein said one or more waveform synthesizers use up-conversion to shift the modulated signal and said modulated signal's specific center frequency to a new frequency about a new specified center frequency.

47. The method of Claim 74 wherein said system is not physically distributed.

48. The method of Claim 74 wherein said wide band excitation signal consists of ambient radiation.

52. Apparatus for obtaining data for measuring the transfer function of a physical system comprising:

a) a waveform synthesizer for generating a synthesized low-power, wide band waveform signal and exciting said physical system with said waveform signal as an input signal;

b) a first data recorder/processor for sampling said low-power, wide band input signal;

c) second and third data recorders/processors located at spatially distributed locations within said physical system;

d) digital fiber optic telemetry for digitally interconnecting each of said first, second and third data recorders/processors and said waveform synthesizer;

e) an acquisition control computer connected to said first, second and third data recorders/processors and said waveform synthesizer in a network arrangement;

f) a synchronization signal generator connected to said network arrangement; and,

g) controller means for simultaneously commanding said waveform synthesizer to broadcast said low-power, wide band input signal to excite the physical system and to send a synchronization signal through said network arrangement to cause said first data recorder/processor to sample said low-power, wide band input signal, to cause said second and third data recorders/processors to measure and record the signals received in said physical system from said low-power, wide band input signal, and to cause

said first, second and third recorders/processors to convert said measured and recorded signals received therein to digital format and to send said digital format in synchronized form through said network arrangement to said acquisition control computer for later processing in said acquisition control computer to compute a transfer function.

53. The apparatus of Claim 52 wherein said waveform synthesizer synthesizes a fully programmable 3 MHz modulated excitation signal about a center frequency located in the range of about 0-999 MHz.

55. The apparatus of Claim 53 wherein said waveform synthesizer is adapted to generate a frequency modulated excitation signal.

60. The apparatus of Claim 53 wherein said waveform synthesizer is adapted to up-convert the modulated excitation signal to a modulated excitation signal about a specified center frequency.

61. The apparatus of Claim 52 wherein said data recorders/processors can record a 3 MHz wide modulated signal centered about any frequency from 0 - 999 MHz.

62. The apparatus of Claim 52 wherein said data recorders/processors use a two-step, down-conversion technique for shifting said excitation signal to a 15 MHz center frequency.

63. The apparatus of Claim 54 wherein said data recorders/processors use a 12-bit analog-to-digital converter sampled at 12 MHz to digitize and store said excitation signal.

72. A method of acquisition and signal transmission through a plurality of spatially distributed locations comprising the steps of:

a) exciting at a low power a physical system with a wide band excitation signal as an input signal;

b) locating a data recorder/processor at spatially distributed locations;

c) interconnecting each said spatially distributed data recorder/processor to an acquisition control computer using a telemetry network;

d) sending a frequency synchronization signal through said telemetry network;

e) simultaneously receiving and recording said wide band excitation input signal in said data recorders/processors at each spatially distributed location

f) sending said recorded signals to said acquisition control computer via said telemetry network; and,

g) using a stochastic process to derive from said recorded signals a system transfer function for said physical system over the width of said wide band excitation signal.

73. The method of Claim 72 including the further step of storing said simultaneously received and recorded wide band excitation input signal in said data recorders/processors at each spatially distributed location.

74. A method of estimating the transfer function of a system comprising the steps of:

a) exciting at a low power said system with wide band excitation signals as input signals;

b) distributing data recorders/processors at various locations about said system;

c) interconnecting each said data recorder/processor to an acquisition control computer using a telemetry network;

d) sending a frequency synchronization signal through said telemetry network;

e) simultaneously receiving and recording said wide band excitation input signals and said frequency synchronization signal in said data recorders/processors at each said location;

f) sending said recorded wide band excitation input signals and said frequency synchronization signal to said acquisition control computer via said telemetry network; and,

g) analyzing said recorded wide band excitation input signals using stochastic processing techniques to estimate the system transfer function.

75. The method of Claim 72 wherein said telemetry network is selected from the group consisting of fiber optic links, radio frequency links, microwave links, optical links and hard wiring links.

76. The method of Claim 72 wherein said telemetry network is selected from the group consisting of daisy chain architecture and star architecture.

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REMARKS

Applicants hereby withdraw their attempted revocation of power of attorney and appointing of new power of attorney filed November 22, 1999. The lawyer, namely Mr. John J. Murphey, License Number 24,896, has been the same lawyer throughout this prosecution and is the inventor's lawyer and the assignee's lawyer throughout this prosecution. In light of the fact that it appears that a patent will soon issue, there is no good reason to change lawyers at this time.

Applicants recognize the call for cancellation of Claims 29 and 35 and then the amendments made to the same claims, in the first Office Action response, and to the confusion this situation as brought. Applicants wish to cancel these two claims and have called for that action in this Amendment B.

Applicants submit herein a copy of Figure 1 showing it to be labeled "PRIOR ART". A copy of this drawing is being submitted to the Official Draftsman and a copy of that communication is enclosed herein.

A new oath is enclosed herein showing the residence and the post office address of each inventor.

A clean sheet of page 8 of the Specification is enclosed herein showing the correction to the title of U.S. Patent 5,068,616. A clean sheet of page 13 of the Specification is enclosed herein showing the word "BRIEF" to be added to the terms

"DESCRIPTION OF THE DRAWINGS". A clean sheet of page 20 of the Specification is enclosed herein showing the "a" at the beginning of the sentence "A fiber optic..." to be capitalized. A clean sheet of the ABSTRACT is enclosed herein showing the words "...comprising the steps of..." to have been deleted in favor of "...involving the steps of...".

Claims 1-16 have been canceled. All the other claims mentioned in paragraph 7 of the second and FINAL Office Action have been amended to change or incorporate the terms required by the Examiner. In the case of Claims 31-33, 36-39, 41-44, 49-51, 54-59, 67, and 69-71, they merely depend from other claims that required amending so that they should now be allowed (allowed by the Examiner in this second Office Action) without further amendment.

Applicants' counsel has addressed all issues raised by the Examiner in this second Office Action. All Claims objected to or rejected by the Examiner have been either amended or canceled. If any issues have not been adequately addressed it was purely unintentional and the Examiner is invited to telephone counsel. The application now

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appears to be in condition for passage to allowance and such action is earnestly solicited.

Respectfully submitted,

Date: July 3, 2001

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